REMARKS

As a preliminary matter, Applicants' undersigned attorney directs the examiner's attention to the copies of revocations and substitutions of power of attorney and change of correspondence address included with this paper. Applicant's attorney requests that the new powers of attorney and change of address be made of record in connection with this application, if this has not already been done.

The Official Action dated April 22, 2002 and the references cited therein have been carefully reviewed. In view of the amendments presented herewith and the following remarks, favorable reconsideration and allowance of this application are respectfully requested.

Status of the prosecution:

Claims 1-9 are pending in this application. In the April 22, 2002 Official Action, all pending claims were rejected, and certain objections to the specification and claims were made.

The specification was objected to as lacking an abstract of the disclosure. Claim 9 was objected to as allegedly being of improper dependent for for failing to further limit the

subject matter of a previous claim. The examiner suggested amending the claim to recite: "A vector comprising the nucleic acid molecule of claim 8."

Claims 4 and 8 were rejected under 35 U.S.C. §112, second paragraph, for alleged indefiniteness. The examiner states that claim 4 refers to itself and that claim 8 is confusing at "complementary to . . . double stranded molecule" and "a part of.."

Claims 1 and 6 were rejected under 35 U.S.C. §102(b) as allegedly anticipated by Schumman et al. (Phys. Plantarum 82: A23 (Abstract 134), 1990). The examiner states that Schumann et al. teach a late blight-resistant potato plant comprising a segment of the *S. bulbocastanum* genome that confers resistance to late blight, wherein the genome segment is incorporated into the plant by somatic hybridization.

Claims 1, 5 and 6 were rejected under 35 U.S.C. §102(b) as allegedly anticipated by Helgeson et al. (Am. Potato J. 72: page 629, first full paragraph, 1995). The examiner states that Helgeson et al. teach a late blight-resistant potato plant comprising a segment of genome from *S. bulbocastanum* comprising a gene that confers resistance to late blight and to early blight, and that the results are obtained by somatic hybridization of a potato plant cell and a cell from *S. bulbocastanum*.

Claims 8 and 9 were rejected under 35 U.S.C. §102(b) as allegedly anticipated by Barry et al., U.S. Patent 5,536,653. The examiner states that Barry et al. teach an isolated nucleic acid (col. 13 and 14, SEQ ID NO:4) that is complementary to a part of SEQ ID NO:5 recited in claims 8 and 9, as well as a vector containing the nucleic acid molecule.

Claims 3 and 7 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Schumann et al. as applied to claims 1 and 6 above, in view of Thieme et al. (Euphytica 97: 189-200, 1997).

The examiner stated that no claims were allowed. However, Applicants note that claim 2 was not objected to or rejected on any ground. Accordingly, claim 2, if re-written in independent form, should be allowable.

Amendments presented in this paper:

In accordance with the present amendment, the specification has been amended by the addition of an abstract. Claim 2 has been canceled, and claims 1, 4, 8 and 9 have been amended. No new matter has been added by these amendments.

Claim 1 has been amended to call for a late blight-resistant potato plant comprising a segment of chromosome 8 of a genome from *Solanum bulbocastanum* which comprises a gene that confers the resistance to late blight. Claim 2 has been canceled because its limitation is now included in claim 1. Claim 4 has been amended to depend from claim 3. Claim 8 has been amended to call for an isolated nucleic acid molecule which is complementary to either strand of a double-stranded DNA molecule, wherein one strand of the DNA molecule comprises SEQ ID NO:5. Claim 9 has been amended to call for a vector comprising the nucleic acid molecule of claim 8.

Applicants assert that the foregoing specification and claim amendments overcome each of the objections and rejections issued in the April 22, 2002 Official Action, and that the claims as amended are in condition for allowance. Support for Applicants' assertion to this effect is set forth below.

Objection to the specification and claims:

The specification was objected to for lack of an abstract. An abstract has been supplied, hence this objection should be overcome and its withdrawal is requested.

Claim 9 was objected to for failing to further limit the subject matter of a previous claim. In accordance with the examiner, claim 9 has been re-written so that it clearly further limits the subject matter of claim 8. Acordingly, withdrawal of this objection is requested.

Rejections under 35 U.S.C. §112, second paragraph:

Claim 4 was rejected as indefinite for depending on itself. Claim 4 now depends on claim 3; accordingly, withdrawal of the rejection on this ground is requested.

Claim 8 was rejected as allegedly indefinite in the recitation of "complementary to . . . double stranded molecule" and "a part of," which the examiner considered confusing. Claim 8 has been re-written to clarify that the recitedisolated nucleic acid molecule is complementary to either strand of a double-stranded DNA molecule, wherein one strand of

the DNA molecule comprises SEQ ID NO:5. The term "part or all" has been removed. Accordingly, withdrawal of the rejection on this ground is requested.

Rejections under 35 U.S.C. §102(b):

Applicants traverse each of these rejections as applied to the claims as presently amended.

Claims 1 and 6 were rejected under 35 U.S.C. §102(b) as allegedly anticipated by Schumman et al. (Phys. Plantarum 82: A23 (Abstract 134), 1990). Claims 1, 5 and 6 were rejected under 35 U.S.C. §102(b) as allegedly anticipated by Helgeson et al. (Am. Potato J. 72: page 629, first full paragraph, 1995). In support of each of these grounds of rejection the examiner asserts that the respective cited references teach a late blight-resistant potato plant comprising a segment of the *S. bulbocastanum* genome that confers resistance to late blight, wherein the genome segment is incorporated into the plant by somatic hybridization.

In order to be properly raised in a rejection under 35 U.S.C. §102, a reference must disclose each and every limitation set forth in the rejected claims. Claim 1 as presently amended now calls for a late blight-resistant potato plant that contains a resistance-conferring segment from chromosome 8 of the *S. bulbocastanum* genome. Neither Schumann et al. nor Helgelson et al. disclose a late blight-resistant potato plant that contains a resistance-conferring segment from chromosome 8 of the *S. bulbocastanum* genome. Hence, neither reference can be said to anticipate the subject matter of claim 1 as amended. For this reason,

the rejection of claim 1 and claims 5 and 6, depending from claim 1, under 35 U.S.C. §102(b) on the basis of either Schumann et al. or Helgeson et al. is untenable, and should be withdrawn.

Claims 8 and 9 were rejected under 35 U.S.C. §102(b) as allegedly anticipated by Barry et al., U.S. Patent 5,536,653. The examiner states that Barry et al. teach an isolated nucleic acid (col. 13 and 14, SEQ ID NO:4) that is complementary to a part of SEQ ID NO:5 recited in claims 8 and 9, as well as a vector containing the nucleic acid molecule. As presently amended, claim 8 now calls for an isolated nucleic acid that is complementary to either strand of a double stranded DNA molecule, wherein one strand comprises SEQ ID NO:5. The nucleic acid molecule disclosed by Barry et al. (SEQ ID NO:4) is not identical to the nucleic acid molecule recited in claim 8. Accordingly, the rejection of claim 8 and dependent claim 9 under 35 U.S.C. §102(b) on the basis of Barry et al. also should be withdrawn.

Rejection under 35 U.S.C. § 103(a):

Claims 3 and 7 were rejected under 35 U.S.C. §103(a) as allegedly unpatentable over Schumann et al. as applied to claims 1 and 6 above, in view of Thieme et al. (Euphytica 97: 189-200, 1997). According to the examiner, Thieme et al. teach incorporation of a gene by genetic transformation and further teach analysis of hybrid clones using RAPD markers. The

examiner asserts that the teachings of Schumann et al. in view of the teachings of Thieme et al. render the subject matter of claims 3 and 7 obvious.

Applicants traverse this rejection as applied to the claims as presently amended. Section 2143 of the MPEP states the three basic requirements of a *prima facie* case of obviousness as follows.

> First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all claim limitations.

MPEP §2143.

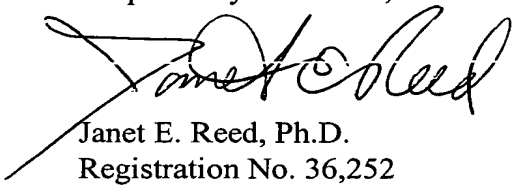
Claims 3 and 7 depend from claim 1, which has been amended to specify that the segment of the *S. bulbocastanum* genome that confers disease resistance to the claimed potato plants resides on chromosome 8. Neither Schumann et al. nor Thieme et al. teach a late blight-conferring gene residing on chromosome 8 of the *S. bulbocastanum* genome. Hence, the references when combined do not teach or suggest all the claim limitations of dependent claims 3 and 7. Moreover, since neither reference alone even hints at the chromosomal location of the disease resistance-conferring segment, there would be no motivation to one of skill in the art to combine the two cited references to arrive at the invention as claimed. Accordingly, the rejection of claims 3 and 7 under 35 U.S.C. §103(a) based on Schumann et al. combined with Thieme et al. is untenable, and should be withdrawn.

Conclusion:

In view of the amendments submitted herewith and the foregoing remarks, the presently-pending claims are believed to be in condition for allowance. Applicants respectfully request early and favorable reconsideration and withdrawal of the objections and rejections set forth in the April 22, 2002 Official Action, and allowance of this application.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the specification:

An Abstract was inserted as follows:

ABSTRACT

Novel germplasm, breeding stock, genetic markers and methods for introducing resistance to late blight and other diseases into cultivated potato plants are disclosed. The germplasm is derived from a segment of the *Solanum bulbocastanum* genome that contains one or more genes conferring resistance to late blight. Also disclosed are *S. bulbocastanum* RAPD fragment markers that co-segregate with the disease resistance gene, as well as chromosome 8 RFLP markers that are tightly linked to the resistance gene(s). These markers are used to monitor passage of the disease resistance trait in breeding crosses.

In the claims:

Claim 2 was canceled.

The claims were amended as follows:

1. (Amended) A late blight-resistant potato plant comprising a segment of chromosome 8 of a genome from *Solanum bulbocastanum* which comprises a gene that confers said resistance to late blight.

4. (Amended) The potato plant of claim 3 [4] wherein the marker comprises a sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2, SEQ ID NO:3, SEQ ID NO:4 AND SEQ ID NO:5.

8. (Amended) An isolated nucleic acid molecule which is complementary to either strand [part or all] of a double-stranded DNA molecule wherein one strand of the DNA molecule comprises [selected from the group consisting of SEQ ID NO:1, SEQ ID NO:2 and] SEQ ID NO:5.

9. (Amended) A vector comprising [T]the nucleic acid molecule of claim 8[, disposed within a vector].